

Brome: a 'sterile' but potent enemy

Sterile Brome control is a particular challenge in winter barley

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Sterile brome is native and widespread in Ireland. It's not hard to recognise as its familiar purple, drooping heads are seen towering above cereal crops and around hedges each June and July. It's an annual grass weed which means a plant must germinate from a seed every year. This is in contrast to scutch, which is a perennial and re-emerges from its roots which survive tenaciously from year to year.

UK research indicates that sterile brome seeds mainly germinate in the autumn, but Irish experience suggests that it has a longer germination pattern here, perhaps due to our milder winters. Sterile brome got its name from the fact that it sheds most of its seed onto the ground before harvest. These seeds can survive for up to three years, but brome doesn't read books so let's assume five!

One key point about sterile brome is that these seeds readily germinate if they are covered in a shallow (less than 1in) layer of soil. I have often noticed brome seeds germinating where chaff forms a mat behind the combine, highlighting the fact that shallow cultivation is all that's needed (just enough to block out the light). Once germinated, they can be ploughed deeply or sprayed off with glyphosate. In wheat and non-cereal break crops we have excellent brome herbicides such as Pacifica, Broadway Star, Aramo and Fusilade Max. However, in barley and oats, there are no chemical control options. So what can we do and how can growers like Jimmy Byrne (profiled here) do to minimise this problem getting onto farms and spreading?

1 Know the weed and how it grows: This sounds simple but, as the quote goes, "you need to know your enemies to beat them". With sterile brome it means understanding that the clock is ticking once the heads appear on the brome. You must get effective stubble cultivations done between harvest and drilling the following crop. This is a busy time and stubble cultivations are often not prioritised but it is the cheapest form of sterile brome control available and the only one for barley and oats. Also, if you have brome growing at bottoms of banks or hedges or around yards, cut the brome as soon as the heads appear in May/June. Brome seeds are viable and shed soon after heading.

2 Follow a zero-tolerance approach with seed: This is already the standard taken by the Department of Agriculture and the Irish Seed Trade Association regarding brome and other grass weeds such as wild oats, canary grass and black grass. Where seed is home-saved, you should never harvest it from weedy fields and ensure it is cleaned correctly. A representative seed sample can also be sent to DAFM, Backweston, to identify any weed species present.

3 Don't ignore small weed patches or low levels of brome: Brome may appear not to be increasing in wheat or spring crops (due to chemical control), but if you switch into winter barley, the problem can escalate, as many growers found in 2015.

4 Avoid spraying glyphosate onto the base of hedges: This sounds counter-intuitive, but once you remove vegetation, brome seeds can germinate. Brome won't germinate in your lawn or at the base of hedge in a grass field. Why? Because the ground is covered with plant material (no light). Removing it allows any brome seeds there to germinate. If you really want brome to flourish in hedges, spray glyphosate





Marianne Mulhall and Jimmy Byrne investigate brome germinating in crop stubbles. See next page for farmer profile.



on the base of the hedge in August/September and cut them tight afterwards – standard practice on many tillage fields.

5 Ensure harvest machinery is clean from brome: I said above that most brome is shed before harvest, but not all. The ones that don't shed hide out in the straw walkers, waiting to jump off as you move into a brome-free field. Another point here is to avoid pulling in bromes from the hedge base when cutting.

6 Plan your rotation carefully: Use spring crops and stale seedbeds to reduce the brome numbers over a few years. Use chemical options in wheat and non-cereal break crops to do the same. Try to avoid continuous winter barley.

7 Think about cultivations: Shallow but effective is the key for stubble cultivations. Growers tell me that match ploughing is the required standard to bury brome seeds six inches. As I said above, brome seeds don't read so bury them eight inches to be sure. Flinty or sandy spots, ins and outs and awkward spots may have to be hand-rogued until the seed depletes. If you min-till, consider match ploughing brome seeds down every five years, then min-till again the following crops. However, the min-till must not disturb the buried seeds, otherwise they will not die.



Farm profile Jimmy Byrne

Jimmy Byrne is farming approximately 80ha of tillage crops on the outskirts of Kilkenny city. His main crop each year is winter wheat but he drills winter barley, spring barley, spring beans and winter oilseed rape for seed for Seedtech in Waterford. Jimmy has been farming here for almost 40 years.

Some of his lands are made up of very light soils in which he sows continuous spring barley. Other parts of the farm consist of heavy, clay type soil, which is better suited to winter cropping.

Jimmy follows a five-year rotation of W. OSR, WW, WW, WB, and WB. The farm has been min-tilling for the last four years with a 3m Kuhn drill and according to Jimmy: "The use of min-till has made it easier to sow the tougher parts of the farm, there are not as many weed patches and I have more even crops since changing to a min till operation. The yields have definitely increased for winter wheat and winter barley, especially in the heavier fields."

Soil fertility is of great importance to Jimmy, he soil samples every four to five years and plans his fertiliser using a nutrient management plan drawn up using these soil results. With the high yields being achieved on the farm in the last few years, Jimmy realises the importance of replacing nutrient off-takes.

One of the main weed problems on the farm is sterile brome. Jimmy has found that the major problem areas are in the fields that have had several years of winter barley. This is mainly



Field four is on the left below and in the aerial shot has a ditch dissecting it.



Aerial photos of Jimmy's farm and the banks where brome is going to be controlled by cutting in May/June.

due to the fact that there is no good brome control permitted for winter barley. Where this problem is occurring and spring crops are next in the rotation Jimmy believes that: "Some allowances should be made in the

regulations to allow the brome to be controlled by spraying over the winter without having to establish the green cover before 1 December. This would give farmers a better chance at controlling the spread of sterile brome."

Brome management programme

The programme below is for one field (field four) on Jimmy's farm. It is a mixture of rotations and chemical options as well as reducing the brome around the hedges. This field has a high population of brome due to the winter barley in 2013-2015. As it was min-tilled, most of the brome is likely to be in the top few inches so the obvious control is to plough them down more than six inches and leave them there by min-tilling for at least the following three years.

	2013-2015	Autumn 2015 to Spring 2016 actions	2016	2017
Field four	W. barley	W. barley stubble	S. Beans	W. Wheat
Effect on Brome	Brome build-up over three years	Aim to reduce seeds before beans	Ploughing will bury brome seeds, beans have brome herbicide options	Min-till after ploughing in 2016 will keep brome buried, wheat has brome herbicide options
Cultivations	Min-till used each year	Light stubble cultivation to encourage brome germination after harvest	'Match plough' before drilling beans	Revert to min-till direct in bean stubble and following crops
Chemical options	No brome options	Glyphosate	Aramo or Fusilade Max	Pacifica Or Broadway Star
Hedgerow management	Hedges cut tight in Sept, glyphosate applied to crop pre-harvest.	None	Brome stretches to be cut manually in May/June. Avoid glyphosate drift	Brome stretches to be cut manually in May/June. Avoid glyphosate drift